

refer to the work whose title is placed at the head of this notice, as containing matter of a sterling character, and which gives promise of much that is sound and genuine. With all his faults, Corda has done a great deal for Mycology, and we should gladly see some one treading in the same footsteps as regards copiousness of illustration, for which a land singularly fertile in mycological productions is most favourable, but avoiding his looseness of synonyms and perplexity as regards everything like system and affinity. There was perhaps some little room for dissatisfaction in the first fasciculus of our author, but if there were just ground for this, we can speak with almost unmixed praise of the second part, which leaves but little to desire, either in point of illustration, or correct appreciation of the requisites of such a publication. As regards the illustrations, we can speak most favourably of their truth and correctness, while every possible pains have been taken to identify the new species with those which have been already published, both in this country and on the continent. We have noticed but one clear case of *double emploi* in the second fasciculus, viz. that of *Myxocyclus confluens*, Riess, which is certainly identical with *Hendersonia polycystis*, Berk. & Br., in *Annals of Nat. Hist.* vol. v. p. 374, where the gelatinous envelope is even more perfectly described than by Fresenius. That this envelope is not of generic importance is proved by numberless instances in the sporidia of *Sphæria* and other genera. We would observe also, that it is impossible to establish genera in *Sphæriacæ* simply by the structure of the sporidia, otherwise species of undoubtedly close affinity will be very widely separated. We suspect that a comparison of specimens would be destructive to one or two more supposed new species, but without absolute inspection we are unwilling to throw out doubts which might prove groundless.

In the first fasciculus, if we mistake not, *Arthrobotrys oligospora* is nothing more than *Trichothecium roseum* correctly observed, *Septosporium nitens* is clearly *Macrosporium sarcinula*, Berk. *Ann. of Nat. Hist.* i. p. 261, and *Nemaspora persicina* is *Cytispora orbicularis*, l. c. p. 207, which more properly belongs to the genus *Glæosporium*.

Mistakes however are inevitable in so difficult a subject, even with the best materials and with access to the most perfect libraries, and there is so much really valuable in the work of Dr. Fresenius that it can well afford to have a few errors pointed out.

A Monograph of the Subclass Cirripedia, with figures of all the species. The Lepadidæ or Pedunculated Cirripedes. By CHARLES DARWIN, F.R.S., F.G.S.*

It is not without some shame that we confess, that we, who ought to be the heralds and indicators of all good work done in Natural History, should have allowed ourselves to be anticipated in justly appreciating the very high merits of Mr. Darwin's Monograph by a body, which we may venture to say, with all respect, is not usually complained of for the too great rapidity of its operations—the Royal

* Ray Society, 1851 (published end of 1852).

Society. Exercising what we cannot but think a most wise discretion, the Council of that learned body has conferred upon Mr. Darwin one of the Royal Medals for the present year : and in paying due honour to abilities so various and so solid as those which have enabled their possessor to produce the most charming book of scientific travels since Humboldt's personal narrative, and who now, turning from the beauties of the great works of nature, has employed the same patient, conscientious labour, in the same comprehensive and philosophical spirit with equal success, upon some of the least attractive and most difficult of her more obscure, though to a right vision, not less wonderful or beautiful creations, they may, we venture to say, claim their own share of honour from the public.

Nor, while we are expressing approbation, should the Ray Society go without its meed. The British public in matters scientific is not unlike the Indians of the Orinooko, who care not much whether they dine on dirt or deer ; the great point, say they, is to fill the stomach. So we have heard grumbings from the members of the 'Ray' that they do not get books enough or often enough. We would advise them to utter no more such murmurs, or worse things may befall them. In nine years their Council has published *the three best Monographs in Europe* in their respective departments, viz. that of Prof. Forbes on the Naked-eyed Medusæ, that of Messrs. Alder and Hancock on the Nudibranchiate Mollusca, and that under notice on the Cirripedia. A fourth most excellent original work has been furnished by Dr. Baird, and a very good, though in the matter of plates very defective, treatise by Mr. Leighton. Of the multitudinous reports and translations we need say nothing.

We may now proceed to indicate the principal points of novel interest in the pages of Mr. Darwin's admirable work.

In the first place he furnishes us with what is essential to all exact study of a class of animals, a definite and scientific nomenclature of the parts of all its members. Passing from this to the Lepadidæ, which are the special subject of the present volume, we find a careful section devoted to their development. Here, the errors of the early observers, who imagined that the larvæ of the Lepadidæ and Balanidæ differed, are explained by showing, what Burmeister first discovered, that all these larvæ pass through two states, the earlier having a flat carapace prolonged into lateral horns, the later possessing a cypriform bivalve carapace. Between these two states there is a transition condition. In the first state the mouth appears to be open, in the last it is closed, so that the creature now justly deserves the title which Mr. Darwin has given it of 'locomotive pupa.'

The locomotive pupa, besides the long antennæ and the eyes, already known, has what Mr. Darwin considers to be auditory organs placed at the anterior end of the sternal surface of the carapace. Within the antennæ Mr. Darwin has discovered ducts terminating close to the suctorial discs, and proceeding from two glands in the neighbourhood of the stomach. These play a most important part in the future proceedings of the animal, and give origin to what the author terms the cement-glands and ducts. When the final meta-

morphosis of the larva takes place, a sort of process is developed from the thorax (well compared by Mr. Darwin with that which supports the antennæ and eyes in *Lucifer*) bearing the antennæ and eyes upon its extremity, and not, as had been supposed, constituted by the union of the former. It is this process which becomes the peduncle of the future *Lepas* in the following manner. The larva fixes itself by the suckers of its antennæ, and then pours out from its cement-ducts a quantity of chitinous cement, by which it becomes glued to the surface of attachment. The compound eyes are exuviated (to be replaced by a single deep-seated eye in the adult), but the antennæ remain, and may always be discovered even when the animal has attained its full development. At the same time a still more important and remarkable change goes on in the remainder of that glandular organ to which we have referred as giving rise to the cement-gland. It sends out ramified processes, part of which remain in the body of the animal and part occupy the peduncle, in which ova are developed; so that, from what was apparently one gland we have two formed, the cement-gland, whose duct opens externally in the antennæ, and the ovary, which never develops a duct at all. Well may the author say, that this is "perhaps the most curious point in the natural history of the Cirripedia." We do not think, however, that it is quite so anomalous or without analogy in other divisions of the animal kingdom as Mr. Darwin appears inclined to suppose; for, putting aside the egg-pouches of *Cyclops* and the well-known glands which secrete an adhesive substance in the female Epizoa, and which are diverticula of the common genital tract, we may refer to the genitalia and Wolfian bodies of mammals as presenting very similar relations.

It is worth remark also, that in *Argulus*, Leydig (Siebold and Kölliker's Zeitschrift, 1852) describes a cephalothoracic spine with glands and ducts occupying a position not altogether dissimilar to the cement-gland.

The respective import of the organs now recognised as generative has been the subject of a great diversity of opinion, expressed by Hunter, Cuvier, Burmeister, Wagner, St. Ange, Mayer, Steenstrup, Goodsir, Leuckart, and Siebold. The truth appears first to have been made out by Wagner and St. Ange, and the exact structure of the testes with their ducts, and of the ovaries, was carefully described by Leuckart (Zur Morphologie und Anatomie der Geschlechtsorgane, 1847), whose account fully agrees in essentials with that of Mr. Darwin. Like him he was unable to discover any external oviducal aperture. On the other hand, Wagner and Siebold (Vergleich. Anat. p. 485) describe as an oviduct a canal extending "from the lower extremity of the valve of the shell downwards on the corresponding side of the foot (peduncle), and opening above by a narrow cleft into the mantle cavity," which is also described by St. Ange.

Mr. Darwin has carefully sought for, but cannot find, this aperture, and we may therefore conclude that it does not exist. He believes, on the other hand, that the ova are detached within the body, enter the vascular sinuses, and by them are carried to the inner sur-

face of the sac or mantle. Here each becomes invested by a sheath formed by the chitinous epidermis of the sac. A new epiderm being developed on the inner, or under, surface of the sheet of ova, they are detached, adhering only by a small band,—the ‘ovigerous frænum.’ As there is no vagina, Mr. Darwin supposes that the ova are fecundated as they pass out, but seems inclined to think that an internal communication between the two sets of organs may also exist. Such a mode of exit appears at first sight anomalous enough, but is not without sufficient analogy. In the *Salpæ*, for instance, the ova, which lie almost free in the blood-sinuses, only attached by a delicate pedicle, are extruded without any oviduct by passing into a diverticulum of the wall of the sinus which gradually closes behind them; and there are Annelids in which exactly the same process takes place.

We should far exceed our limits if we were to advert to all the matters of interest in this remarkable book. Those who wish to learn many anatomical novelties—the nature of the nervous system, of the olfactory and auditory organs, &c., must turn to the work itself. We can here only advert to two points, which, like children, we have reserved as *bonnes bouches* for the end.

In the first place, we could not have held up our head again in the critical chair without finding an error; and here it is: “Chitine is confined to the Articulata;” though, as it is only contained in a note at p. 30, and is by no means of importance to the general purport of the work, the difficulties of our search may be conceived. Seriously, however, we notice the mistake because it is one which is very generally admitted. The fact is, on the contrary, that Chitine exists in the jaws and sepistaire of Cephalopods; in the lingual plate in these and the Gasteropoda—the jaws of *Helix*—the shells of *Cymbulia*, *Aplysia* and *Bullæa*—the byssus of Lamellibranchs—the shell of *Lingula* and the skeleton of *Gorgonia*,—besides being present in a number of the annuloid forms of the Radiata (Leuckart, Wiegman. Arch. 1852).

The other matter to which we would refer is Mr. Darwin’s discovery—most important in a physiological point of view—of the existence, in certain species of *Ibla* and *Scalpellum*—true and complete hermaphrodites, be it remembered—of what he aptly terms ‘*Complemental Males*.’

Mr. Darwin appears to us to produce an overwhelming body of evidence in favour of the conclusions at which he arrives, which are, in a few words, these:—In certain species of these two genera the generality of the larvæ become Barnacles, to all appearance as completely provided with all the requisites for the continuation of the species as the other members of the genus, the testes and ovaria being well-developed. A careful eye, however, might discover pits on the scutum or folds upon its edge, of a peculiar character. The fact is, these pits and folds are a sort of arm-chairs for the occupation of a small male, developed from certain other ova, who at an early period of development takes possession of his seat, and attains no further stage. Mouthless and stomachless, ‘wholly supported by

his family,' his sole function appears to be, to develop and excrete his spermatozoa, and then die out of the way to make room for a successor in the marital rostrum.

In all physiology we know of no case parallel with this; and the only light upon it at present appears to us to be afforded by the discovery, also due to Mr. Darwin, that in other species of these genera a complete separation of the sexes is to be met with. Are some of the transitional species between the monœcious and diœcious forms a sort of hermaphrodite 'free-martins' in the male division, requiring extraneous assistance?

But we must conclude, and those of our readers who understand that scientific zoology is a different matter from more or less effectually tanning and naming animal exuvæ, will, we are sure, join us in offering to Mr. Darwin—what even a Royal medal attains its only true value by expressing symbolically—the hearty thanks of all his fellow-workers.

PROCEEDINGS OF LEARNED SOCIETIES.

ZOOLOGICAL SOCIETY.

July 22, 1851.—John Edward Gray, Esq., F.R.S. &c., Vice-President, in the Chair.

ON SOME GENERA OF SHELLS, ESTABLISHED IN 1807 BY THE LATE H. F. LINK. BY DR. HERRMANNSEN, OF KIEL.

In several programs, hitherto not at all taken notice of by any Conchologist, the renowned Botanist Link of Berlin, then Professor of Natural History, Chemistry and Botany at Rostock, in the course of the years 1806 to 1808, has published an account of the Collections of the Rostock University. These little treatises seem to be very rare, nor do I remember ever to have found them mentioned, before my 'Index Generum Malacozoorum' recorded them. Yet they may claim priority in many instances, which I hope will be redeemed by simply noticing their contents. The German titles of these octavo pamphlets are as follows:—

Beschreibung der Naturalien-Sammlung der Universität zu Rostock, von Dr. H. F. Link. Rostock. Gedruckt bei Adlers Erben.

Erste Abtheilung; zum Weihnachtsfest, d. 25 Dec. 1806 (p. 1–48).

Zweite Abth.; zum Osterfest, d. 29 März 1807 (p. 49–98).

Dritte Abth.; zum Pfingstfest, d. 17 Mai 1807 (p. 99–165).

Vierte Abth.; zum Weihnachtsfest, d. 25 Dec. 1807 (p. 1–30).

Fünfte Abth.; zum Osterfest, d. 7 April 1808 (p. 1–38).

Sechste Abth.; zum Pfingstfest, d. 5 Juni 1808 (p. 1–38).

Passing over those genera which are either superfluous because formerly rightly published under other names, or unhappily contrived, I will hint at those that may deserve to be attended to.